AMENDMENTS TO THE CLAIMS

Following is a complete listing of the claims pending in the application, as amended:

1.   (Cancelled)

2.   (Currently Amended) The method of claim ~~1~~5 wherein ascertaining T-wave segments comprises (a) determining an average/median beat estimate having a QRS complex and a T-wave segment and (b) cross-correlating the QRS complexes of the repetitive waveforms with the QRS complex of the average/median beat estimate to align the beats.

3.   (Currently Amended) The method of claim ~~1~~5 wherein ascertaining T-wave segments comprises determining a heart rate according to an R-R interval and a P-Q interval, and computing a T-wave duration period for the T-wave segment in the beat based on the R-R interval and the P-Q interval.

4.   (Original) The method of claim 3 wherein ascertaining the T-wave segments further comprises defining an onset time corresponding with the end of a Q-wave segment and an endpoint at the T-wave duration period after the onset time.

5.   (Currently Amended) ~~The method of claim 1~~ A method of processing data for conditioning T-wave segments of a waveform used in estimating T-wave alternans, comprising:

ascertaining T-wave segments from a physiologic signal having substantially repetitive waveforms of a heart beat;

determining a correction factor based on a set of the repetitive waveforms and a reference waveform;

applying the correction factor to the T-wave segments to compensate for noise in the signal; and

further comprising determining the reference waveform by computing an average/median beat waveform from a set of the repetitive waveforms.

6.   (Original)   The method of claim 5 wherein determining the correction factor comprises determining an amplitude gain factor and/or a DC shift factor by comparing the average/median beat waveform with individual waveforms in the set of repetitive waveforms.

7.   (Original)   The method of claim 5 wherein determining the correction factor comprises determining an amplitude gain factor and/or a DC shift factor by comparing a P-S segment of the average/median beat waveform with corresponding P-S segments of individual waveforms in the set of repetitive waveforms.

8.   (Currently Amended)   ~~The method of claim 1~~ A method of processing data for conditioning T-wave segments of a waveform used in estimating T-wave alternans, comprising:

  ascertaining T-wave segments from a physiologic signal having substantially repetitive waveforms of a heart beat;

  determining a correction factor based on a set of the repetitive waveforms and a reference waveform;

  applying the correction factor to the T-wave segments to compensate for noise in the signal; and

  wherein applying the correction factor comprises (a) determining an amplitude gain factor ~~and/or~~ and a DC shift factor, (b) computing a polynomial function FG for the amplitude gain factor and FC for the DC shift factor, and (c) normalizing the T-wave segments according to the following equation.

$$ECG_{corrected}(i) = \frac{ECG(i) - F_C(i)}{F_G(i)}$$

9.   (Original) A method for improving signal to noise ratio in data obtained from a physiologic signal representative of a subject's heart activity having plurality of substantially repeating physiologic waveforms, the method comprising:

(a)   isolating a plurality of repeating physiologic waveforms from the signal to define a plurality of isolated waveforms;

(b)   computing a representative waveform from the isolated waveforms;

(c)   comparing the representative waveform with individual isolated waveforms to determine a correction factor having an amplitude gain correction factor $G(m)$ and/or a DC shift correction factor $C(m)$; and

(d)   establishing a correction curve fit to the correction factor from the isolated individual waveforms.

10.   (Original) The method of claim 9, further comprising normalizing the isolated individual waveforms by applying the correction curve to the isolated individual waveforms.

11.   (Original) The method of claim 9 further comprising deriving a respiration rate from a sequence of amplitude gain correction factors $G(m)$ after determining the correction factor in procedure (c).

12.   (Original) The method of claim 9, further comprising deriving a respiration rate by computing from a sequence of amplitude gain factors $G(m)$ the time between peaks of the sequence, the average time between a plurality of peaks in the sequence, and/or the peak in the power of a Fourier transform computed from the sequence.

13.   (Original) The method of claim 9 further comprising repeating procedures (a) through (d) for each of a plurality of signals representative of a subject's heart activity.

14.   (Original) The method of claim 9 further comprising acquiring the physiological signal while performing a stress test on the subject.

15.   (Original)   The method of claim 9 further comprising acquiring the physiological signal by obtaining ECG data of the subject's heart.

16.   (Original)   The method of claim 9 wherein identifying the T-wave segments comprises (a) determining an average/median beat estimate having a QRS complex and a T-wave segment and (b) cross-correlating the QRS complexes of the repetitive waveforms with the QRS complex of the average/median beat estimate to align the beats.

17.   (Original)   The method of claim 9 wherein identifying T-wave segments comprises temporally identifying an onset and a conclusion of individual T-wave segments.

18.   (Original)   The method of claim 9 wherein identifying T-wave segments comprises temporally identifying an onset and a pre-determined T-wave duration to set a time-defined conclusion of at least some of the T-wave segments.

19.   (Original)   The method of claim 9 further comprising aligning a plurality of the T-wave segments before computing the estimated alternan signatures.

20.   (Original)   The method of claim 19 wherein aligning the T-wave segments comprises using a consistently identifiable portion common to several of the repeating waveforms to temporally align the T-wave segments before computing the estimated alternan signatures in procedure (b).

21.   (Original)   The method of claim 9 further comprising determining a beat estimate from the repeating physiological waveforms and using the beat estimate to establish a best estimate for the onset of the T-wave segments.

22.   (Original) The method of claim 21 wherein the best estimate for the onset of the T-wave segments comprises a time-window definition for identifying the T-wave segments.

23-26. (Cancelled)

27.   (Currently Amended) ~~The system of claim 23~~ A system for collecting and conditioning data regarding T-wave segments for use in estimating T-wave alternans, the system comprising:

a data source configured to obtain and/or retain digitized data of a physiologic signal having substantially repetitive waveforms of a heart beat; and

a computer operatively coupled to the data source, the computer having a computer operable medium containing instructions for (a) ascertaining T-wave segments from the physiologic signal, (b) determining a correction factor related to noise in the signal based on a set of the repetitive waveforms and a reference waveform, and (c) applying the correction factor to the T-wave segments to compensate for noise in the signal, wherein the instructions contained in the computer operable medium for ascertaining T-wave segments comprise defining an onset time corresponding with the end of a Q-wave segment and an endpoint at a predetermined T-wave duration period after the onset time.

28.   (Currently Amended) ~~The system of claim 23~~ A system for collecting and conditioning data regarding T-wave segments for use in estimating T-wave alternans, the system comprising:

a data source configured to obtain and/or retain digitized data of a physiologic signal having substantially repetitive waveforms of a heart beat; and

a computer operatively coupled to the data source, the computer having a computer operable medium containing instructions for (a) ascertaining T-wave segments from the physiologic signal, (b) determining a correction factor related to noise in the signal based on a set of the repetitive waveforms and a reference waveform, and (c) applying the correction

factor to the T-wave segments to compensate for noise in the signal, wherein the instructions contained in the computer operable medium for determining a correction factor related to noise further comprise determining the reference waveform by computing an average/median beat waveform from a set of the repetitive waveforms.

29.   (Currently Amended) ~~The system of claim 23~~ A system for collecting and conditioning data regarding T-wave segments for use in estimating T-wave alternans, the system comprising:

a data source configured to obtain and/or retain digitized data of a physiologic signal having substantially repetitive waveforms of a heart beat; and

a computer operatively coupled to the data source, the computer having a computer operable medium containing instructions for (a) ascertaining T-wave segments from the physiologic signal, (b) determining a correction factor related to noise in the signal based on a set of the repetitive waveforms and a reference waveform, and (c) applying the correction factor to the T-wave segments to compensate for noise in the signal, wherein the instructions contained in the computer operable medium for determining a correction factor related to noise comprise determining an amplitude gain factor and/or a DC shift factor by comparing the average/median beat waveform with individual waveforms in the set of repetitive waveforms.

30.   (Currently Amended) ~~The system of claim 23~~ A system for collecting and conditioning data regarding T-wave segments for use in estimating T-wave alternans, the system comprising:

a data source configured to obtain and/or retain digitized data of a physiologic signal having substantially repetitive waveforms of a heart beat; and

a computer operatively coupled to the data source, the computer having a computer operable medium containing instructions for (a) ascertaining T-wave segments from the physiologic signal, (b) determining a correction factor related to noise in the signal based on a set of the repetitive

waveforms and a reference waveform, and (c) applying the correction factor to the T-wave segments to compensate for noise in the signal, wherein the instructions contained in the computer operable medium for determining a correction factor related to noise comprise determining an amplitude gain factor and/or a DC shift factor by comparing a P-S segment of the average/median beat waveform with corresponding P-S segments of individual waveforms in the set of repetitive waveforms.

31.   (Currently Amended)   ~~The system of claim 23~~ A system for collecting and conditioning data regarding T-wave segments for use in estimating T-wave alternans, the system comprising:

a data source configured to obtain and/or retain digitized data of a physiologic signal having substantially repetitive waveforms of a heart beat; and

a computer operatively coupled to the data source, the computer having a computer operable medium containing instructions for (a) ascertaining T-wave segments from the physiologic signal, (b) determining a correction factor related to noise in the signal based on a set of the repetitive waveforms and a reference waveform, and (c) applying the correction factor to the T-wave segments to compensate for noise in the signal, wherein the instructions contained in the computer operable medium for applying the correction factor comprise (a) determining an amplitude gain factor ~~and/or~~ and a DC shift factor, (b) computing a polynomial function F_G for the amplitude gain factor and F_C for the DC shift factor, and (c) normalizing the T-wave segments according to the following equation.

$$ECG_{corrected}(i) = \frac{ECG(i) - F_C(i)}{F_G(i)}$$